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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,220	07/12/2001	Yurong Shi	TT4869	5200

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EXAMINER

KOSOWSKI, ALEXANDER J

ART UNIT PAPER NUMBER

2125

DATE MAILED: 02/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/905,220

Applicant(s)

SHI ET AL.

Examiner

Alexander J Kosowski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2003.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-7,9-12 and 14-31 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 17-31 is/are allowed.  
6) ☒ Claim(s) 1,4-7,9-12 and 14-16 is/are rejected.  
7) ☒ Claim(s) 1 and 7 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

- 1) Claims 1, 4-7, 9-12 and 14-31 are presented for examination in light of the amendment filed 12/4/03.

#### ***Claim Objections***

- 2) Referring to claim 1, line 3, the phrase "collection plan;" should read --collection plan; and--.

Referring to claim 7, line 4, the phrase "collection plan;" should read --collection plan; and--.

Appropriate correction is required.

#### ***Allowable Subject Matter***

- 3) Claims 17-31 are allowed.
- 4) The following is a statement of reasons for the indication of allowable subject matter:
- Referring to claims 17-31, the claims are allowable for the reasons cited by Attorney in the "Remarks" section of the amendment filed 12/4/03.

#### ***Claim Rejections - 35 USC § 103***

- 5) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- 6) Claims 1, 4-7, 9-12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable by Nulman (U.S. Pat 6,303,395), further in view of Ezekiel (U.S. Pat 5,790,977).

Referring to claim 1, Nulman discloses a method comprising the steps of entering semiconductor process parameters into a statistical process control system and configuring an equipment interface, using the statistical process control system, to collect the semiconductor process parameters (col. 8 lines 5-8 and col. 9 lines 29-31, whereby the MES environment contains a metrology controller, which collects semiconductor process parameters for the SPC system). However, Nulman does not explicitly teach receiving a request from an equipment interface for a data collection plan, nor that configuring includes providing the data collection plan to the equipment interface.

Ezekiel teaches receiving requests from equipment interfaces for data collection plans and configuring the equipment interface by providing the data collection plan (col. 1 lines 44-56).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to receive a request from an equipment interface for a data collection plan and to provide the data collection plan to the equipment interface in the method taught by Nulman since this would allow for flexibility in accessing an instrument from a remote location (Ezekiel, col. 6 lines 27-28), and since new interfaces and transform functionalities could be designed and an application could be updated at the site of the instrument which would significantly extend the life of the instrument as well as provide versatility in adapting an instrument to run with remote applications which use various programming platforms (Ezekiel, col. 6 lines 36-47).

Referring to claim 4, Nulman discloses a statistical process control system (col. 6 lines 56-60) whereby process parameters are entered (col. 8 lines 5-8). However, Nulman does not

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disclose the step of selecting entering parameters includes referencing a data collection capability specification.

Ezekiel a method whereby a data collection specification is accessible (col. 1 lines 44-56).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a data collection specification in the method taught by Nulman since this would allow for flexibility in accessing an instrument from a remote location (Ezekiel, col. 6 lines 27-28), and since new interfaces and transform functionalities could be designed and an application could be updated at the site of the instrument which would significantly extend the life of the instrument as well as provide versatility in adapting an instrument to run with remote applications which use various programming platforms (Ezekiel, col. 6 lines 36-47).

Referring to claim 5, Nulman discloses measuring a process parameter on a semiconductor wafer, and providing the process parameter to the statistical process control system through the equipment interface (col. 8 lines 5-8 and col. 9 lines 29-31). However, Nulman does not explicitly teach that the process parameter is measured in accordance with a data collection plan.

Ezekiel teaches a method whereby a data collection plan may be utilized for measuring process parameters (col. 4 lines 43-51 and col. 5 lines 31-47).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a data collection plan in the method taught by Nulman since this would allow for flexibility in accessing an instrument from a remote location (Ezekiel, col. 6 lines 27-28), and since new interfaces and transform functionalities could be designed and an application could be

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updated at the site of the instrument which would significantly extend the life of the instrument as well as provide versatility in adapting an instrument to run with remote applications which use various programming platforms (Ezekiel, col. 6 lines 36-47).

Referring to claim 6, Nulman discloses that the step of measuring includes providing a trigger to a metrology tool from a manufacturing execution system (col. 7 lines 53-67 and col. 8 lines 1-14, whereby the MES encompasses the metrology controller, which triggers metrology tools to collect process parameters).

Referring to claim 7, Nulman discloses a method comprising the steps of establishing a data collection plan using a statistical process control system, the data collection plan identifying data to collect from a semiconductor tool (col. 8 lines 5-8 and col. 9 lines 29-31, whereby the metrology controller must request information from the various metrology tools, and whereby the controller must be programmed for data collection parameters such as a desired sampling frequency, etc.), and providing the data collection plan to an equipment interface of the semiconductor tool through the statistical process control system (col. 8 lines 5-8 and col. 9 lines 29-31, whereby the MES environment contains a metrology controller, which collects semiconductor process parameters for the SPC system). However, Nulman does not explicitly teach receiving a request from an equipment interface to receive a data collection plan, nor that the data collection plan is provided to an equipment interface in response to receiving the request from the equipment interface.

Ezekiel teaches a method whereby a request from an equipment interface is received for a data collection plan, and whereby an equipment interface is configured by providing the data collection plan to the equipment interface (col. 1 lines 44-56).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to receive a request from an equipment interface for a data collection plan and to provide the data collection plan to the equipment interface in the method taught by Nulman since this would allow for flexibility in accessing an instrument from a remote location (Ezekiel, col. 6 lines 27-28), and since new interfaces and transform functionalities could be designed and an application could be updated at the site of the instrument which would significantly extend the life of the instrument as well as provide versatility in adapting an instrument to run with remote applications which use various programming platforms (Ezekiel, col. 6 lines 36-47).

Referring to claim 9, Nulman discloses a statistical process control system (col. 6 lines 56-60). However, Nulman does not explicitly teach that the step of establishing includes referencing a data collection capability specification.

Ezekiel teaches referencing a data collection capability specification (col. 1 lines 44-56).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to reference a data collection capability specification in the method taught by Nulman since this would allow for flexibility in accessing an instrument from a remote location (Ezekiel, col. 6 lines 27-28), and since new interfaces and transform functionalities could be designed and an application could be updated at the site of the instrument which would significantly extend the life of the instrument as well as provide versatility in adapting an instrument to run with remote applications which use various programming platforms (Ezekiel, col. 6 lines 36-47).

Referring to claim 10, Nulman does not explicitly teach the step of performing a measurement consistent with a data collection plan.

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Ezekiel teaches the use of a data collection plan for measurements (col. 4 lines 43-51 and col. 5 lines 31-47).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to perform a measurement consistent with a data collection plan in the method taught by Nulman since this would allow for flexibility in accessing an instrument from a remote location (Ezekiel, col. 6 lines 27-28), and since new interfaces and transform functionalities could be designed and an application could be updated at the site of the instrument which would significantly extend the life of the instrument as well as provide versatility in adapting an instrument to run with remote applications which use various programming platforms (Ezekiel, col. 6 lines 36-47).

Referring to claim 11, Nulman discloses that the step of performing a measurement includes providing a trigger to a metrology tool from a manufacturing execution system (col. 7 lines 53-67 and col. 8 lines 1-14, whereby the MES encompasses the metrology controller, which triggers metrology tools to collect process parameters).

Referring to claims 12 and 14-16, the claims vary from claims 7 and 9-11 only in that they claim a computer readable medium tangibly embodying a program of instructions, rather than a method. The method taught by Nulman could inherently be applied to a computer readable medium tangibly embodying a program of instructions. Therefore, referring to claims 12 and 14-16, see rejection of claims 7 and 9-11, respectively, above.

### ***Response to Arguments***

7) All arguments from the amendment filed 12/4/03 are rendered moot in view of the new office action above.



*Conclusion*

8) The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

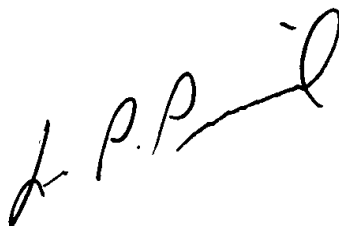
Sullivan et al (U.S. Pat 5,838,595) – teaches model based process control.

9) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander J Kosowski whose telephone number is 703-305-3958. The examiner can normally be reached on Monday through Friday, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 703-308-0538. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. In addition, the examiner's RightFAX number is 703-746-8370.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Alexander J. Kosowski  
Patent Examiner  
Art Unit 2125



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